Section 9: Best Available Retrofit Technology (BART)

Under section 169A(b)(2)(A) of the CAA, states must require certain large stationary sources to install and operate additional emission controls called Best Available Retrofit Technology (BART). The BART provision applies only to major stationary sources from a list of sources ranging from fossil-fuel fired steam electric plants of more than 250 million British thermal units (Btus) per hour heat input to chemical process plants to carbon black plants.   EPA has identified 26 source categories of stationary sources that encompass the entire list in the CAA.   The sources must have become operational between 1962 and 1977, and emit 250 tons or more per year of any air pollutant that may reasonably be anticipated to cause or contribute to any impairment of visibility in any Class I areas. The rule allows a state to implement an emissions trading or other alternative program in lieu of BART if the state can demonstrate that the trading program or alternative will achieve greater reasonable progress than the installation of BART.

On July 6, 2005, U. S. EPA published a revised final rule, including Appendix Y to 40 CFR part 51 "Guidelines for BART Determinations Under the Regional Haze Rule" (Guidelines) that provides direction to states on determining which of these older sources may need to install BART and how to determine BART. LDEQ is requiring sources subject to BART to install, operate, and maintain BART rather than implement an emissions trading program or other alternative measure instead of BART.

9.1 BART –Eligible Sources in Louisiana

The BART-eligible sources were identified using the methodology in the Guidelines. The department sent a survey, which detailed the criteria for BART sources, to every reporter (1167 facilities) to the emissions inventory for the state. Of the 1167 facilities, 1165 facilities responded and 77 self-reported that BART-eligible units were located at specific facilities.   Of the two non-responders, the state determined that one was out of business; the other was an oil and gas tank battery with minor emissions located in the center of the state and not likely to affect any Class I area even if it did meet the criteria. Appendix E lists the survey results as well as a detailed description of each BART eligible emission unit. The following guideline-established criteria were used by facilities to determine if an emission unit was BART eligible:

One or more emissions units at the facility fit within one of the 26 categories listed in the Guidelines;

 The emission unit(s) were in existence on August 7, 1977 and began operation at some point on or after August 7, 1962; and

 The limited potential emissions from all emission units identified in the previous two bullets emission units were greater than 250 tons or more per year of any of these visibility-impairing pollutants: sulfur dioxide (SO_2), nitrogen oxides (NO_x), and Particulate Matter (PM_{10}).

The Guidelines recommend addressing the visibility-impairing pollutants SO_2, NO_x, and PM during the identification process. As recommended, LDEQ addressed the three pollutants and used PM less than 10 microns in diameter (PM_{10}) as an indicator for PM to identify BART-eligible units. Although Volatile Organic Compounds (VOCs) and ammonia emissions date were collected, LDEQ did not evaluate emissions of VOCs and ammonia in BART determinations for the reasons below:

1) Figures 9.1, 9.2, and 9.3 confirm there is an overwhelming majority of light extinction due to SO_4 caused by SO_2 emissions. The light extinction from is much smaller on most days. (See figures next page)

2) VOC emissions are currently being addressed by the state in LAC 33:III.Chapter 21, Control of Emission of Organic Compounds. These rules were promulgated as a control measure for an ozone nonattainment area. The rules are applicable state-wide in some form or another and are considered by the state to be Reasonable Available Control Technology (**RACT**). Total VOC emissions in the state in 2003 are 161 million pounds. BART emissions of VOC were 65860 pounds, or 0.04% of the total; clearly not a significant contributor.

3) Ammonia emissions are addressed through the Louisiana Toxic Air Pollutant Emission Control Program LAC 33:III.Chapter 51. Ammonia is considered a state toxic air pollutant and controls have been implemented to lower ammonia emissions statewide. Total actual ammonia emissions fluctuated from 12.9 million pounds to 16.6 million pounds in 2001 and 2002, respectively. In 2003, 12.6 million pounds were reported; 26,300 pounds were identified as emitted from BART eligible sources, or BART emissions were 0.21 % of the total; also, clearly not a significant contributor.

Louisiana has several power plants that generate over 750 MW and have electrical generating units (EGUs) greater than 200 MW. However Louisiana participates in the Clean Air Interstate Rule (CAIR) and as such BART will not be required for NO_x and SO_2. Only the PM emissions component of these EGUs needs to be addressed.
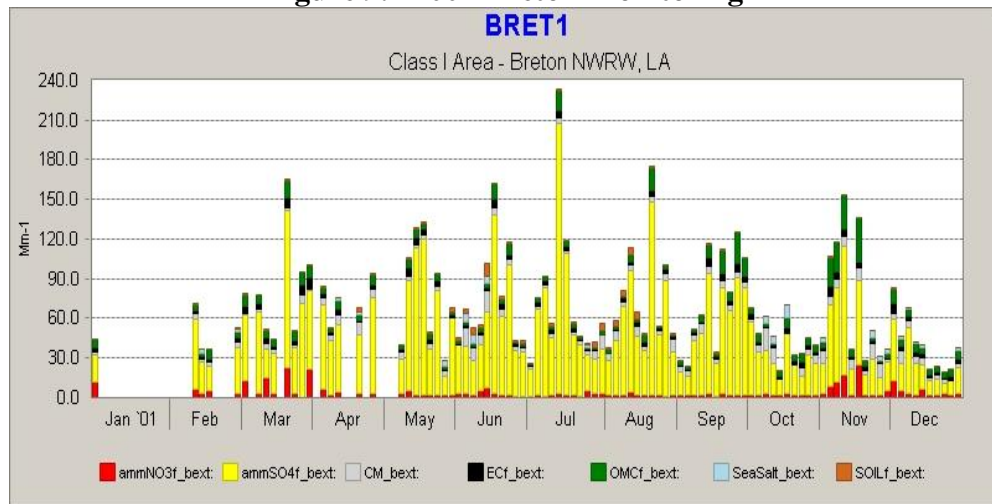
Figure 9.1 2001 Breton Monitoring

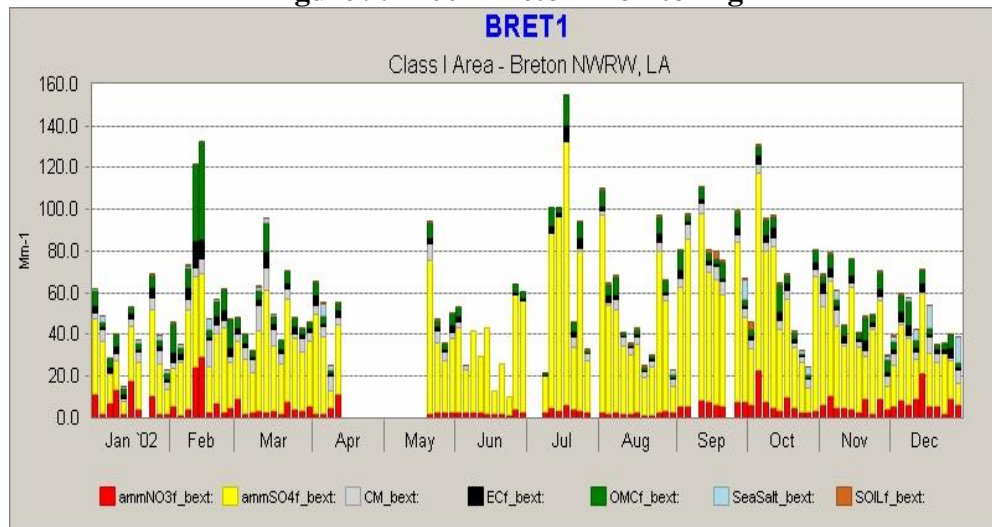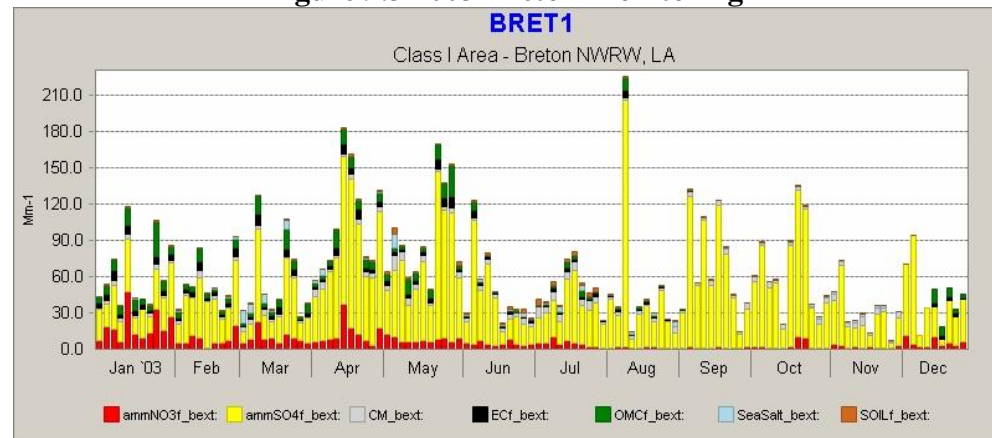**Figure 9.2 2002 Breton Monitoring**

Figure 9.3 2003 Breton Monitoring

9.2 BART Air Quality Modeling Approach

EPA's BART guidance lists acceptable air quality modeling approaches. LDEQ chose to use the individual source attribution approach, which entails modeling source-specific BART-eligible units and comparing modeled impacts to the deciview threshold. The individual source attribution modeling approach is specifically designed for conducting a source-specific subject-to-BART screening analysis. If the screening indicates modeled impacts to visibility at any Class I area below a certain value, in this case, 0.5 deciviews, then the modeled BART-eligible units are not subject to BART. Figure 9.4 indicates that all Louisiana sources will have a potential impact on Breton of only 15 inverse megameters of light extinction or about 4.0 deciviews and a much smaller impact at any other Class I area on the 20% worst days in 2018. There are less than 80 BART–eligible sources and they emit less than 0.4% of the total NO_x, SO_2, and PM emissions. As indicated in the preamble to the Guidelines, 0.5 is the largest number that EPA will accept. Due to small percentage of BART-eligible emissions to total emissions, 0.5 deciviews appears to be appropriate in Louisiana. This modeling should not be confused with the visibility analysis conducted for a New Source Review permit. But because they are similar, the same air dispersion model may be used for both.

9.3 Determination of Sources Subject to BART

According to the Guidelines, a state has two options for determining its BART-eligible sources: A) make BART determinations for all sources or B) consider exempting those sources which do not cause or contribute to visibility impairment in a Class I area. LDEQ has chosen Option B. When using Option B, the Guidelines suggest three sub-options for determining whether certain sources need not be subject to BART:

(1) Individual source attribution approach (dispersion modeling)
(2) Use of model plants to exempt sources with common characteristics
(3) Cumulative modeling to show that no sources in Louisiana are subject to BART

LDEQ has chosen a hybrid combination of sub-options 1 and 2. Initially, the department modeled actual facilities and used the results of the modeling to exclude as many BART-eligible sources as possible from the BART requirement. Following this modeling, individual source attribution was used for those remaining BART-eligible sources that initially were not excluded.

Table 9.1 contains the list of Class I areas to be included in the BART-eligible analysis for states in CENRAP. The list was developed for the subject-to-BART screening evaluation conducted by ENVIRON for CENRAP.

Table 9.1 – Potential Class I Areas Included in BART Impact Assessment
In the CENRAP California Puff Model (CALPUFF) South Domain

Class I Area	State	Visibility Monitoring Site Name
Bandelier Wilderness Area	NM	BAND1
Big Bend National Park	TX	BIBE1
Bosque del Apache Wilderness Area	NM	BOAP1
Breton Wilderness Area	LA	BRET1
Caney Creek Wilderness Area	AR	CACR1
Carlsbad Caverns National Park	NM	GUMO1
Great Sand Dunes Wilderness Area	CO	GRSA1
Guadalupe Mountains National Park	TX	GUMO1
Hercules-Glades Wilderness Area	MO	HEGL1
La Garita Wilderness Area	CO	WEMI1
Mesa Verde National Park	CO	MEVE1
Mingo Wilderness Area	MO	MING1
Pecos Wilderness Area	NM	WHPE1
Salt Creek Wildlife Refuges	NM	SACR1
San Pedro Parks Wilderness Area	NM	SAPE1
Upper Buffalo Wilderness Area	AR	UPBU1
Weminuche Wilderness Area	CO	WEMI1
Wheeler Peak Wilderness Area	NM	WHPE1
White Mountain Wilderness Area	NM	WHIT1
Wichita Mountains Wildlife Refuges	OK	WIMO1

Because of transport due to meteorological conditions, a Louisiana facility may impact a number of these Class I areas. The year 2018 CENRAP CAMx source apportionment (PSAT) modeling analysis, see Figure 9.4, indicates the Class I areas potentially impacted by emissions from all of Louisiana facilities, not just BART sources, and the modeled visibility degradation.

Figure 9.4 CENRAP PSAT Modeling
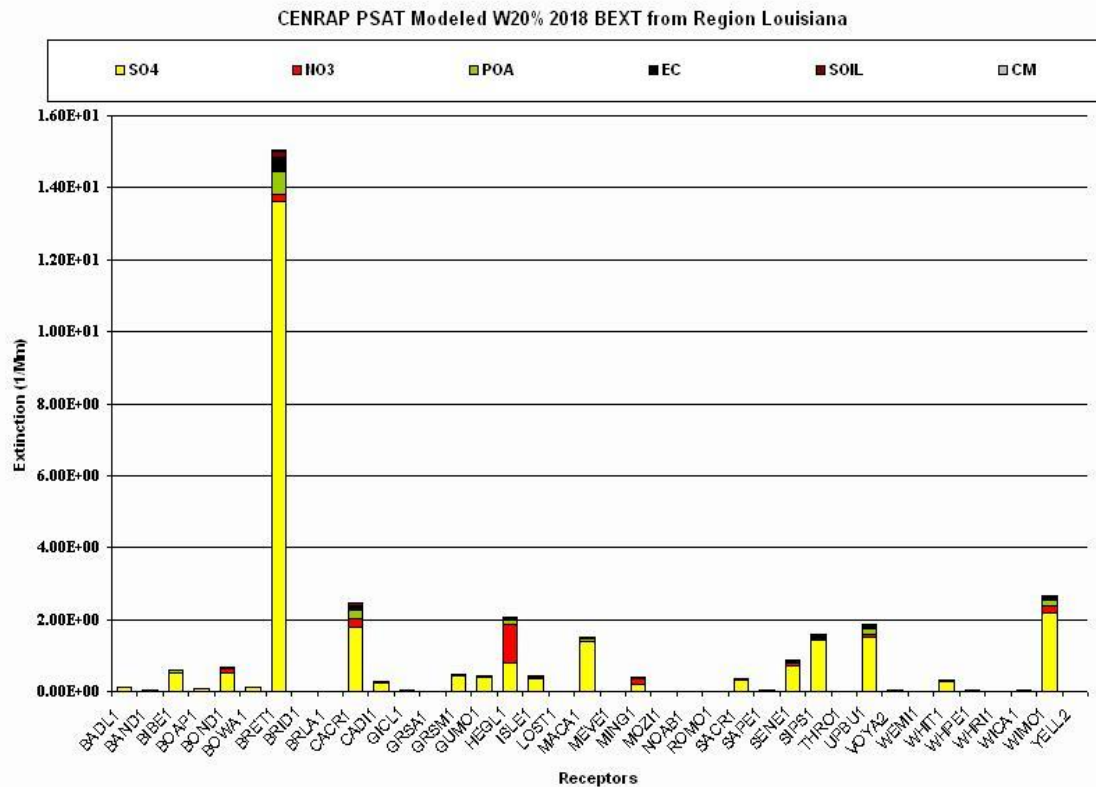
The following analysis assumes that the much smaller subset of emissions from BART sources in Louisiana would potentially affect the same Class I areas as those impacted by the source apportionment results (Figure 9.4) which is based upon the emissions of all Louisiana facilities. Modeling results in Figure 9.4 indicate that there are seven (7) Class I areas that experience an impact of over 1.0 inverse megameter of light extinction from emissions from all sources in Louisiana. The department concluded that Class I areas with impacts of less than 1.0 inverse megameters of light extinction can be ruled out. According to the modeled results the Class I areas potentially impacted are:

- Breton (LA),
- Caney Creek (AR),
- Hecules Glades (MO),
- Mammoth Cave (KY),
- Sipsey (AL),
- Upper Buffalo (AR), and
- Wichita Mountain (OK).

In order to refine the number of possible Class I areas that may have visibility impacts from BART sources in Louisiana, an artificial "model" source was created to examine impacts to Class I areas to the north and west (Upper Buffalo, Hercules Glades, or Wichita Mountain). The model source was placed in De Soto Parish in the northwest corner of Louisiana. Several California Puff Model (CALPUFF) iterations, each reducing NO_x and SO_2 emissions, were made until the "model" facility's emissions no longer impacted the visibility of Upper Buffalo, Hercules Glades, or Wichita Mountain. The criterion used to determine this "no impact" was that the CALPUFF model results must indicate a visibility impact of less than 0.5 deciviews at each of these Class I areas. If emissions from this model facility are less 1392 tons per year (tpy) of both NO_x and SO_2 and 2514 tpy of PM_{10} then there is no impact at Upper Buffalo, Hercules Glades, or Wichita Mountain. The stack parameters used in CALPUFF were 160 meters--stack height, 7.62 meter—stack diameter, 12.65 meters/sec.—stack velocity, and 345.77 Kelvin— exit stack temperature, selected to accommodate long range transport of visibility impairing pollutants. The 160 meter stack height is greater than twice the height of any of the BART-eligible facilities in Northern Louisiana that may impact Class I areas to the north and the west. Because of the geographic relationship of the "model" facility's location, placed in extreme north west Louisiana, with respect to the Class I areas that were modeled in the CALPUFF screening, it is reasonable to conclude all Louisiana BART facilities to the south and the east of the "model" facility would not have an impact of 0.5 deciviews or more to Upper Buffalo, Hercules Glades, or Wichita Mountains. So these Class I areas can be eliminated as potentially impacted Class I areas from Louisiana BART sources.

The department then examined the Class I areas to the east. The Sipsey and Mammoth Cave Class I areas are more than 300 kms from any Louisiana BART source. In addition, VISTAS has supplied some residence time and area of influence plots for Sipsey and Mammoth Cave for 2002-2004. These plots shown in Figures 9.5-9.8 indicate that any visibility impact is minimal and both Class I areas may also be removed from consideration for the remainder of the BART analysis.
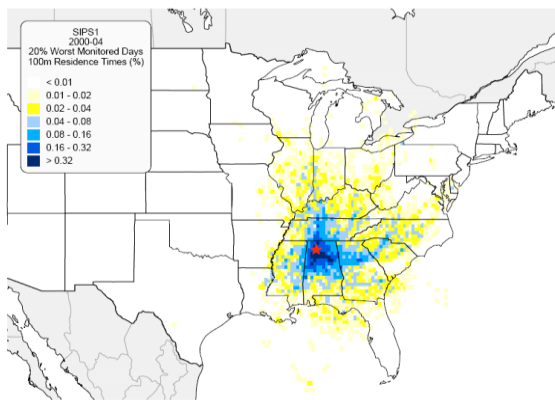
Figure 9.5
Residence Time for 20% Worst Days
2000-2004 at Sipsey Wilderness Area
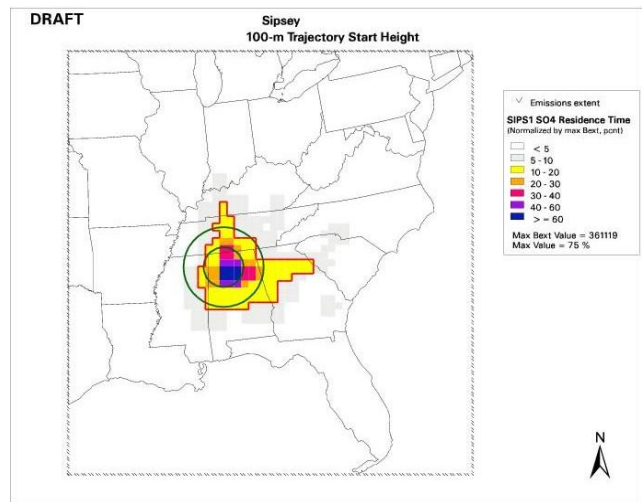
Figure 9.6
SO2 Area of Influence for Sipsey Wilderness Area, AL
Green circles indicate 100-km and 200-km radii from Class I area.
Red line perimeter indicate Area of Influence with Residence Time ≥ 10%
Orange line perimeter indicate Area of Influence with Residence Time ≥ 5%.
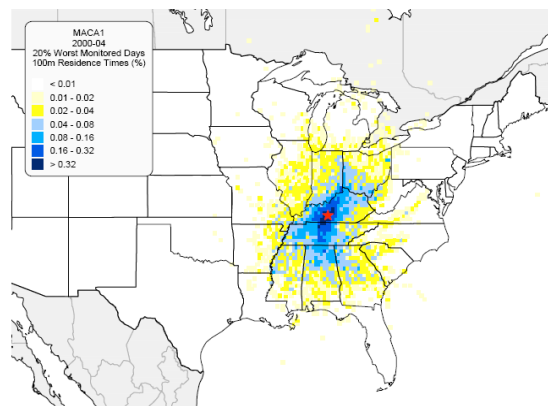
Figure 9.7
Residence Time for 20% Worst Days in
2000-200420 2004 at Mammoth Cave

Figure 9.8
SO2 Area of Influence for Mammoth Cave, KY
Green circles indicate 100-km and 200-km radii from Class I area.
Red line perimeter indicate Area of Influence with Residence Time ≥ 10%
Orange line perimeter indicate Area of Influence with Residence Time ≥ 5%.

Therefore it can be concluded from the results of the department's CALPUFF screening, the examination of the residence time, and the area of influence plots that the Class I areas of concern for Louisiana BART-eligible facilities are Caney Creek in Arkansas and Breton in Louisiana.
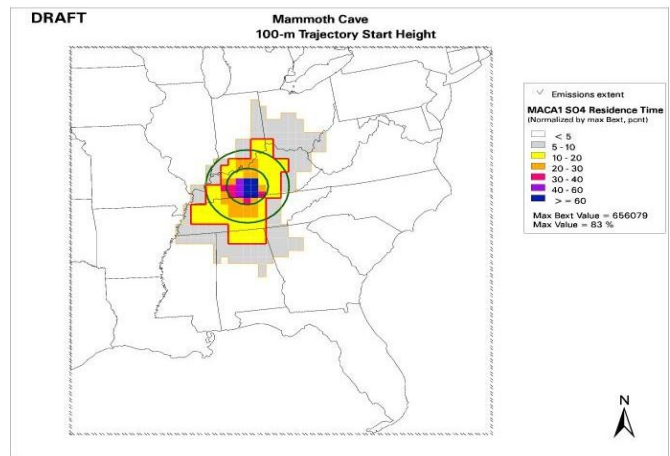
The discussion that follows is a description of the process used to determine BART sources which impact these two Class I areas. First, the BART-eligible facilities in Louisiana with visibility impairing pollutants were sorted by distances to the nearest Class 1 area. Second, the ratios of the total of visibility impairing emissions to the distance to the Class I area was calculated on the spreadsheet. See Tables 9.2 and 9.3 for this information. Third, the facilities with the higher emissions to distance ratios were modeled with the CALPUFF screening model using the following methodology:

- EPA regulatory approved model, CALPUFF version 5.711a;
- CENRAP 6 km spacing resolution domains with no observation
- CALMET met data of 2001, 2002 and 2003; and,
- Ozone data for 2001, 2003 Louisiana state ozone data and 2002 CENRAP southern region ozone data were used in the screening process.
- The 24 hour maximum pollutant emissions of NO_x, SO_2 and particulate collected in the BART survey were used for the model emissions inputs.
- POSTUTIL was used in calculation of repartitioning of NO3/HNO3 without ammonia data.
- CALPOST version 5.51 was used to determine the visibility impact on the Class I area of interest.

In accordance with the Guidelines, a contribution threshold of 0.5 deciviews (98th percentile) was used for determining which sources were subject to BART. The screening evaluation criterion was a maximum deciview impact of greater than 0.5 deciviews to require a refined analysis.

The two (2) existing facilities that had the highest emission divided by distance ratios with respect to the Caney Creek Class I area were Smurfit Stone in Jackson Parish, Louisiana and Chemtrade Refining in Caddo Parish, Louisiana. Results of the facility's screening are shown in table 9.4. Modeled results indicated that there was no visibility impact at Caney Creek. Model outputs are listed below:

- Smurfit Stone, Jackson Parish, Louisiana; distance from Caney Creek equals 263km SSE
  - o 2001 inputs indicated 0.188 dv impact
  - o 2002 inputs indicated 0.259 dv impact

- 2003 inputs indicated 0.183 dv impact
- Chemtrade Refining, Caddo Parish, Louisiana; distance from Caney Creek equals 226.6km almost due south
  - 2001 inputs indicate 0.043 dv impact
  - 2002 inputs indicate 0.052 dv impact
  - 2003 in puts indicate 0.042 dv impact.

Graphics Packaging International (see facility 1 in Table 9.4) reported revised BART-eligible emissions after the screening modeling had begun, so this facility was requested to perform its own screening. The remaining facilities listed in Table 9.2, were eliminated from BART consideration as their emissions were less than either Smurfit Stone or Chemtrade Refining and they were farther away from the Caney Creek Class I area. As a check, LDEQ modeled a carbon black plant, Cabot Company in Evangeline Parish and a coal-fired EGU, Big Cajun 2 in Pointe Coupee Parish that were over 300 kms from Caney Creek and emitted high amounts of visibility impairing pollutants from tall stacks. The modeling indicated there was no impact to visibility at Caney Creek.

Table 9.2 BART-eligible facilities closest to Caney Creek

COMPANY NAME	STATION-ARY SOURCE NAME	LONGITUDE	LATITUDE	DIS-TANCE TO CLASS 1 AREA (KM)	SO2 24-hour MAXIMUM (tons/day)	NOx 24-hour MAXIMUM (tons/day)	PM10 24-hour MAXIMUM (tons/day)	total SO2, NOx, and PM	total/dis-tance
Graphic Packaging International	West Monroe Mill	-92.1526003	32.48667262	272.8	2.33	9.66	1.89	13.88	0.05088
Smurfit-Stone Container Enterprise, Inc	Facility Wide	-92.7271006	32.27364037	262.9	0.51	4.94	5.75	11.2	0.042602
International Paper Company	Bastrop - Louisiana Mill	-91.908196	32.78150968	264.7	4.83	2.32	3.75	10.9	0.041179
Boise Cascade	DeRidder Paper Mill	-93.3753244	30.85758291	395.3	4	5.3	2.35	11.65	0.029471
Koch Nitrogen Company	Sterlington Ammonia Plant	-92.0826419	32.68555292	260.5	0.01	4.57	0.13	4.71	0.018081
Weyerhaeuser Company	Red River Mill	-93.1714369	31.9039304	285.8	0.38	1.37	0.79	2.54	0.008887
Cleco Power LLC.	Rodemacher Power Station	-92.7185213	31.3996156	352.4	40.25	15.88	2.94	2.94	0.008343
Entergy Louisiana	Sterlington	-92.0792663	32.70266681	259.4	10.57	19.5	1.46	1.46	0.005628

COMPANY NAME	STATION-ARY SOURCE NAME	LONGITUDE	LATITUDE	DIS-TANCE TO CLASS 1 AREA (KM)	SO2 24-hour MAXIMUM (tons/day)	NOx 24-hour MAXIMUM (tons/day)	PM10 24-hour MAXIMUM (tons/day)	total SO2, NOx, and PM	total/distance
Chemtrade Refinery Services Inc.	Sulfuric Acid Plant	-93.6336163	32.35992291	226.6	1.17	0.03	0.02	1.22	0.005384
City of Ruston	Ruston Electrical Generation Station	-92.6137195	32.52735312	243.7	1.83	1.18	0.13	0.13	0.000533
Procter & Gamble Manufacturing Company	Alexandria Plant	-92.4100859	31.36766549	366.7	0	0.05	0.1	0.15	0.000409
City of Natchitoches Utility Dept.	Springfield Boiler	-93.0945177	31.76913137	302.2	3.59	3.86	0.1	0.1	0.000331

The methods chosen for determining visibility impairment for the Breton Class I area were somewhat different than the methods used for Caney Creek. In this instance LDEQ modeled two facilities: ConocoPhillips Alliance Refiner in St. Bernard Parish, Louisiana and the Big Cajun 2 power plant in Pointe Coupee Parish, Louisiana. Because Louisiana is a CAIR state, only the particulate matter (PM_{10}) component was used when performing the modeling for Big Cajun 2.

Model results from both facilities indicated an impact of visibility at Breton. LDEQ used as its criteria an emissions/distance ratio equal to or greater than Big Cajun 2 (0.0898678). If a facility's emissions/distance ration was greater then 0.0898678 then the facility was requested to conduct its own modeling exercise. Facilities 2 through 10 in Table 9.4 met this criterion.

LDEQ then performed screening models on Murphy Oil USA, Meraux Refinery, St. Bernard Parish, Louisiana and the Entergy Michoud facility in Orleans Parish, Louisiana. Once again, because Louisiana is a CAIR state, the Entergy Michoud facility was screened only for particulates. Both of these facilities were found to have an impact on visibility at Breton, and both were requested to perform the refined modeling. (Facilities 11 and 12 in Table 9.4) Facility 13, Sid Richardson, was requested to perform refined modeling also because its emissions/distance ratio was slightly greater than of Murphy Oil (0.0891079).

Looking at BART-eligible facilities further to the west from Breton, LDEQ performed the screening model on the Dupont Ponchartrain Diamines Unit, St. John the Baptist Parish, Louisiana. The results of this run showed no impact on visibility at Breton.

Using established guidelines, LDEQ removed all of the remaining facilities listed in Table 9.3 that were a greater distance from Breton from BART consideration with exceptions listed below.

LDEQ then modeled, as a reality check, Cabot Corporation, which is a carbon-black, facility located 332.3 km west of Breton in Evangeline Parish, Louisiana. This facility was chosen because it emits high amounts of visibility impairing pollutants from a tall stack. The modeling indicated there was no impact from this facility at Breton.

To hedge against the uncertainties of the department's BART-eligible screening analysis, LDEQ formally requested other BART-eligible facilities that had emissions greater than 5 tons and within 250 kms to perform a screening analysis. That action added facilities 15, 16, and 17 and 19 through 27 in Table 9.4. LDEQ then added Chalmette Refining, facility 14, and Union Carbide, facility 18, because their emissions approached 5 tons and both facilities are within 150 km of Breton.

Table 9.3 BART-eligible facilities closest to Breton

COMPANY NAME	STATION-ARY SOURCE NAME	LONGITUDE	LATITUDE	DISTANCE TO CLASS 1 AREA (KM)	SO2 24-hour MAXIMUM (tons/day)	NOx 24-hour MAXIMUM (tons/day)	PM10 24-hour MAXIMUM (tons/day)	total SO2, NOx, and PM	total/distance
Marathon Petroleum Company, LLC-LA Refining Division	Garyville Refinery	-89.40832724	30.059162	50.9	2.74	9.55	0.73	13.02	0.2557957
Conoco-Phillips Co.	Alliance Refinery	-89.98078866	29.678193	93.9	40.48	11.94	1.78	54.2	0.5772098
Murphy Oil USA, Inc.	Meraux Refinery	-89.94436291	29.930831	96.4	4.88	3.23	0.48	8.59	0.0891079
Chevron Oronite Company LLC	Oak Point Plant	-90.01148298	29.809566	98.8	2.74	0.08	0.01	2.83	0.0286437
Chalmette Refining, L.L.C.	Chalmette Refinery	-89.97400146	29.930644	99	0.22	4.2	0.11	4.53	0.0457576
Entergy New Orleans	Michoud	-89.93791281	30.006128	99.1	101.96	22.73	7.39	7.39	0.0745711
Entergy Louisiana	Ninemile Point	-90.14143463	29.949253	114.9	14.09	107.06	1.37	1.37	0.0119234

COMPANY NAME	STATIONARY SOURCE NAME	LONGITUDE	LATITUDE	DISTANCE TO CLASS 1 AREA (KM)	SO2 24-hour MAXIMUM (tons/day)	NOx 24-hour MAXIMUM (tons/day)	PM10 24-hour MAXIMUM (tons/day)	total SO2, NOx, and PM	total/distance
Temple Inland	Bogalusa Mill	-89.85998757	30.778264	123.7	14.57	5.5	2.2	22.27	0.1800323
Valero Refining-New Orleans, LLC	St. Charles Refinery	-90.39563933	29.985771	139.3	2.99	5.14	1.1	9.23	0.0662599
Shell Chemical LP	Norco Chemical Plant - East Site	-90.40704044	29.999184	140.8	0.06	7.33	0.3	7.69	0.0546165
Motiva Enterprises LLC	Norco Refinery	-90.40704044	29.999184	140.8	1.41	4	0.16	5.57	0.0395597
Union Carbide Corp.	Taft/Star Manufacturing Complex	-90.45488109	29.984369	144.7	1.51	3	0.2	4.71	0.0325501
Entergy Louisiana	Little Gypsy	-90.46080445	30.016234	146.2	28.28	112.16	0.57	0.57	0.0038988
Entergy Louisiana	Waterford	-90.47590204	29.993072	146.9	101.85	31.97	4	4	0.0272294
DuPont	Pontchartrain Diamines Unit	-90.5261004	30.053921	153.4	0.09	10.01	0.15	10.25	0.0668188
DuPont Performance Elastomers	Pontchartrain Chloroprene Unit	-90.52610018	30.05393	153.4	0.07	0.41	0.03	0.51	0.0033246
Terrebonne Parish Consolidated Government	Houma Generating Station	-90.72158049	29.578969	165	0.01	2.52	0.02	0.02	0.0001212
Gramercy Alumina	Gramercy Alumina	-90.66701652	30.058482	166.4	0.13	6.07	0.36	6.56	0.0394231
Mosaic Fertilizer LLC	Uncle Sam Plant	-90.83242332	30.039483	181.1	39.16	3.34	0	42.5	0.234677
Koch Pipeline Company, L.P.	St. James Terminal	-90.84342098	30.030074	181.9	0	0	0	0	0
Motiva Enterprises, LLC	Convent Refinery	-90.89767031	30.033776	187	0	0	0	0	0
Chevron Phillips Chemical Company, LP	St. James Styrene Facility	-90.91386764	30.080657	189.8	0	0	0	0	0
Mosaic Fertilizer LLC	Faustina Plant	-90.91684168	30.0813	190.1	0	4.18	1.67	5.85	0.0307733
E.I. du Pont de Nemours & Co., Inc.	Burnside Plant	-90.91387658	30.123194	191.1	28.4	0.16	0	28.56	0.1494505
CF Industries	CF Industries Donaldsonville	-90.95785687	30.086915	194	0.03	8.88	1.72	10.63	0.0547938

COMPANY NAME	STATION-ARY SOURCE NAME	LONGITUDE	LATITUDE	DISTANCE TO CLASS 1 AREA (KM)	SO2 24-hour MAXIMUM (tons/day)	NOx 24-hour MAXIMUM (tons/day)	PM10 24-hour MAXIMUM (tons/day)	total SO2, NOx, and PM	total/ distance
BASF Corporation	Geismar Site	-90.98059623	30.210231	200	2.65	1.05	0.24	3.94	0.0197
Shell Chemical LP	Geismar Plant	-90.99523584	30.182353	200.4	0	2.82	0.15	2.97	0.0148204
Chemtura USA Corporation	Geismar Plant	-91.00669483	30.205804	202.2	0.05	0.57	0.36	0.98	0.0048467
Monochem, Inc.	Geismar Facility	-91.010967	30.210447	203	0.01	4.79	0.11	4.91	0.02418719
PCS Nitrogen	Geismar Plant - Ammonia Group	-91.05376269	30.226629	207.2	33.4	15.02	1.94	50.36	0.2430502
Williams Olefins LLC	Geismar Ethylene Plant	-91.05301053	30.231057	207.3	0.01	1.29	0.13	1.43	0.0068982
TOTAL Petrochemicals USA, Inc.	Cos-Mar Styrene Monomer Plant	-91.06780502	30.220973	208.3	0.02	1.45	0.99	2.46	0.0118099
Louisiana Energy & Power Authority	Morgan City Steam Plant	-91.18922897	29.689935	209.8	0	4.14	0	4.14	0.0197331
Syngenta Crop Protection	St. Gabriel Plant - HCN Unit	-91.10344169	30.246737	212.4	0	0.11	0.06	0.17	0.0008004
Entergy Gulf States	Willow Glen	-91.11729738	30.272667	214.6	169.77	59.62	5.39	5.39	0.0251165
ExxonMobil Refining & Supply Co.	ExxonMobil Baton Rouge Refinery	-91.16847335	30.482699	224.8	4.68	6.33	1.68	12.69	0.0564502
The Dow Chemical Company	Louisiana Operations	-91.23272546	30.269765	224.9	0.48	0	0.25	0.73	0.0032459
ExxonMobil	Baton Rouge Chemical Plant	-91.16954678	30.494912	225.1	4.18	6.21	3.17	13.56	0.0602399
Lion Copolymer, LLC	Baton Rouge Plant	-91.17323005	30.504635	225.7	0	0	0	0	0
Louisiana Energy and Power Authority	Plaquemine Steam Plant	-91.25555522	30.271876	227.1	0	1.35	0	1.35	0.0059445
Rhodia, Inc.	Baton Rouge Facility	-91.18800147	30.508143	227.2	34.1	1.87	0.01	35.98	0.1583627

COMPANY NAME	STATION-ARY SOURCE NAME	LONGITUDE	LATITUDE	DISTANCE TO CLASS 1 AREA (KM)	SO2 24-hour MAXIMUM (tons/day)	NOx 24-hour MAXIMUM (tons/day)	PM10 24-hour MAXIMUM (tons/day)	total SO2, NOx, and PM	total/distance
Placid Refining Company, L.L.C.	Port Allen Refinery	-91.21028582	30.474709	228.5	8.15	1.46	0	9.61	0.0420569
Sid Richardson Carbon Company	Addis Plant	-91.27950387	30.329033	231.2	19.49	0.52	0.68	20.69	0.0894896
Exide Technologies	Baton Rouge Smelter	-91.24267772	30.584765	234.2	6.86	0	0	6.86	0.0292912
Columbian Chemicals Company	North Bend	-91.45548632	29.679773	235.3	0	0	0	0	0
Cabot Corporation	Canal Plant	-91.47352568	29.682689	237	0.03	0.29	0.05	0.37	0.0015612
Georgia Pacific	Port Hudson Operations	-91.28110753	30.650659	239.6	3.55	7.37	2.45	13.37	0.0558013
Cleco Power LLC.	Teche Power Station	-91.54348023	29.823214	244.5	7.44	11.27	1.73	1.73	0.0070757
Tembec USA LLC	St. Francisville Mill	-91.31830837	30.709643	244.8	0.57	3.23	1.18	4.98	0.0203431
Louisiana Generating LLC	Big Cajun 1 Power Plant	-91.35383789	30.671025	246.9	23.06	24.23	0.89	0.89	0.0036047
Louisiana Generating LLC	Big Cajun 2 Power Plant	-91.36650704	30.724414	249.7	269.32	51.62	22.44	22.44	0.0898678
Degussa Engineered Carbons, LP	Ivanhoe Carbon Black Plant	-91.7378093	29.778371	262.7	20.14	24.94	3.46	48.54	0.1847735
Lafayette Utilities System	Louis "Doc" Bonin Electric Generation Station	-92.04593816	30.236709	298.9	0.02	8.2	0.3	0.3	0.0010037
Cabot Corporation	Cabot Ville Platte Plant	-92.25346608	30.74712	332.3	4.03	0.46	0.08	4.57	0.0137526
International Paper	Pineville Mill	-92.3481993	31.293607	358.9	6.9	8.37	2.67	17.94	0.0499861
PPG Industries, Inc.	Derivatives	-93.28590531	30.230548	415.1	0	0.56	0.43	0.99	0.002385
Entergy Gulf States	Nelson	-93.29170698	30.284239	416.5	51.84	19.44	3.31	3.31	0.0079472
CITGO Petroleum	Lake Charles Manufacturing Complex	-93.32013703	30.18219	417.6	2.59	2.09	1.48	6.16	0.014751
Sasol North America Inc.	Lake Charles Chemical Plant	-93.32505385	30.186464	418.1	0.16	1.63	0.19	1.98	0.0047357

COMPANY NAME	STATION-ARY SOURCE NAME	LONGITUDE	LATITUDE	DISTANCE TO CLASS 1 AREA (KM)	SO2 24-hour MAXIMUM (tons/day)	NOx 24-hour MAXIMUM (tons/day)	PM10 24-hour MAXIMUM (tons/day)	total SO2, NOx, and PM	total/distance
Equistar Chemicals	Lake Charles Plant	-93.32577352	30.190505	418.3	0	0.62	0	0.62	0.0014822
CITGO Petroleum Corporation	Clifton Ridge Terminal	-93.32987551	30.165164	418.3	0	0	0	0	0
Firestone Polymers LLC	Lake Charles Facility	-93.33136675	30.185618	418.7	0	0.09	0.09	0.18	0.0004299
CITGO Petroleum Corporation	Pecan Grove Tank	-93.34601014	30.178776	420	0	0	0	0	0

Table 9.4: Facilities Requested to either Screen or Perform Refined Modeling

	Company Name	Source Name	AI Number
1	Graphic Packaging International	West Monroe Mill	1432
2	ConocoPhilips Co.	Alliance Refinery	2418
3	Marathon Petroleum Company, LLC	Garyville Refinery	3165
4	PCS Nitrogen	Geismar Plant	3732
5	Mosaic Fertilizer LLC	Uncle Sam Plant	2532
6	Degussa Engineered Carbons LP	Ivanhoe Carbon Black Plant	2518
7	Temple Inland	Bogalusa Mill	38936
8	Rhodia, Inc	Baton Rouge Facility	1314
9	E.I. du Pont de Nemours & Co., Inc.	Burnside Plant	67572
10	Louisiana Generating LLC	Big Cajun 2 Power Plant	38867
11	Murphy Oil USA, Inc.	Meraux Refinery	1238
12	Entergy New Orleans	Michoud	32494
13	Sid Richardson Carbon Company	Addis Plant	4174
14	Chalmette Refining , L.L.C.	Chalmette Refinery	1376
15	Valero Refining-New Orleans, LLC	St Charles Refinery	26003
16	Motiva Enterprises LLC	Norco Refinery	1406
17	Shell Chemical LP	Norco Chemical Plant – East Site	26336
18	Union Carbide Corp.	Taft/Star Manufacturing Complex	2083

19	Gramercy Alumina	Gramercy Alumina	1388
20	Mosaic Fertilizer LLC	Faustina Plant	2425
21	CF Industries	CF Industries Donaldsonville	2416
22	Entergy Gulf States	Willow Glen	2625
23	ExxonMobil Refining & Supply Co.	ExxonMobil Baton Rouge Refinery	2638
24	ExxonMobil	Baton Rouge Chemical Plant	286
25	Placid Refining Company, L.L.C.	Port Allen Refinery	2366
26	Exide Technologies	Baton Rouge Smelter	1396
27	Georgia Pacific	Port Hudson Operations	2617

The results of the individual screening and refined modeling analyses for each source that could not be eliminated from BART consideration are included in Table 9.5. Each modeling exercise was reviewed and approved by LDEQ, FLM, and EPA. Appendix E contains more detailed results of the screen-modeling analyses for each BART-eligible facility which was notified to either run the screening or refined model.

Table 9.5: CALPUFF/CALPOST Screening Results

Facility	AI Number	Status
Graphic Packaging	1432	Passed Screening Model
Conoco Philips Co.	2418	Failed Refined Model
Marathon Petroleum Company, LLC	3165	Passed Screening Model
PCS Nitrogen	3732	Passed Refined Model
Mosaic Fertilizer, LLC	2532	Passed Refined Model
Degussa Engineered Carbons, LP	2518	Passed Refined Model
Temple Inland	38936	Passed Screening Model
Rhodia, Inc.	1314	Failed Refined Model
E.I. du Pont de Nemours & Co., Inc.	67572	Passed Screening Model
Sid Richardson Carbon Company	4174	Failed Refined Model

Facility	AI Number	Status
Louisiana Generating, LLC	38867	Passed Refined Model
Murphy Oil USA, Inc.	1238	Passed Refined Model
Entergy New Orleans	32494	Passed Refined Model
Chalmette Refining, LLC	1376	Passed Screening Model
Valero Refining-New Orleans,LLC	26003	Passed Screening Model
Motiva Enterprises, LLC	1406	Passed Refined Model
Shell Chemical, LP	26336	Passed Refined Model
Union Carbide Corp.	2083	Passed Screening Model
Gramercy Alumina	1388	Passed Screening Model
Mosaic Fertilizer, LLC	2425	Passed Screening Model
CF Industries	2416	Passed Screening Model
Entergy Gulf States	2625	Passed Refined Model
Exxon Mobil Refining and Supply Co.	2638	Passed Screening Model
Exxon Mobil	286	Passed Screening Model
Placid Refining Company, LLC	2366	Passed Screening Model
Exide Technologies	1396	Passed Screening Model
Georgia Pacific	2617	Passed Screening Model
International Paper	2140	Passed Screening Model

The facilities with BART-eligible units found to be subject to BART are shown in Table 9.6. Facilities found subject to BART must complete a BART engineering analysis.

Table 9.6 Facilities with Units Subject to BART in Louisiana

Facility Name	AI Number	Emission Units Subject to BART	Pollutants Evaluated in BART	Determination Contribution to Visibility Impair (delta deciview)
Conoco Philips Co.	2418	Various emission points in facility	SO_2, NO_x, and PM	**2.689**
Rhodia, Inc.	1314	Sulfuric acid Units 1 and 2	SO_2	**1.043/0.164**
Sid Richardson Carbon Company	4174	Units 1,2, and 3 flares and dryers 2,3, and 4	SO_2	**0.568**

Each of these facilities completed a BART engineering analysis located in appendix E . Each BART analysis was eventually approved by the department as satisfying the BART requirement. The Conoco Philips, and Rhodia engineering analyses were based upon a national compliance order. There were no infeasible technical or economic limitations. The Sid Richardson Company's, a carbon black manufacturing facility, engineering analysis included the potential installation of both NO_x , SO_2, and PM add-on controls but it determined that all were infeasible. (there were no demonstrated NO_x or SO_2 or PM scrubbing technologies at any carbon black plants). No work standard or practice was proposed nor does the department believe a work standard or practice is available. The controls in the engineering analyses will appear as permit requirements as these permits are issued no later than 5 years after EPA approval of this plan. The placing of these control requirements in permits will assure that control equipment is properly operated and maintained.

Figures 9.9, 9.10, and 9.11 depict specific BART-eligible sources, their modeled deciview impact, location and distance from the two Class I areas for 2001, 2002, and 2003.
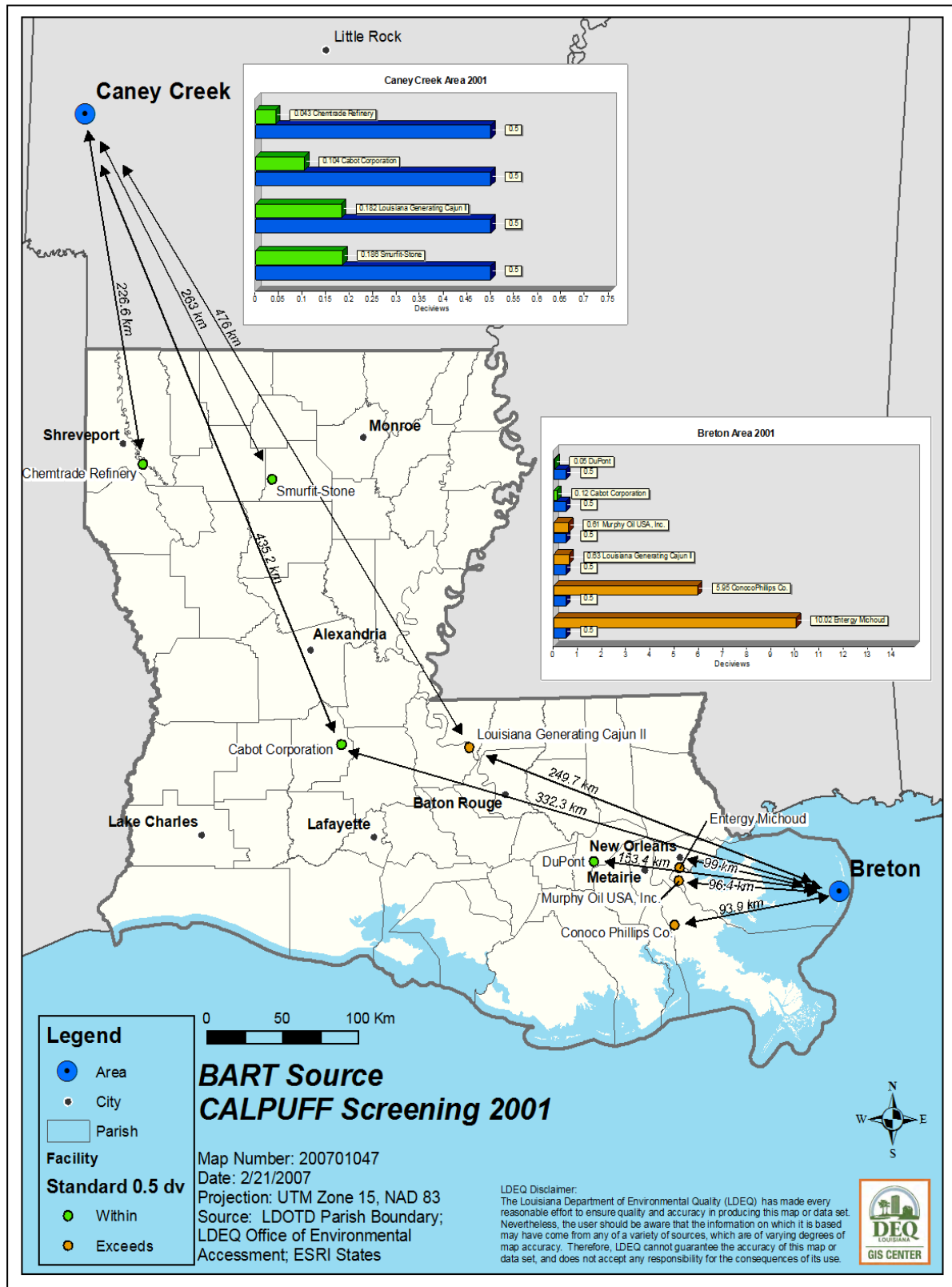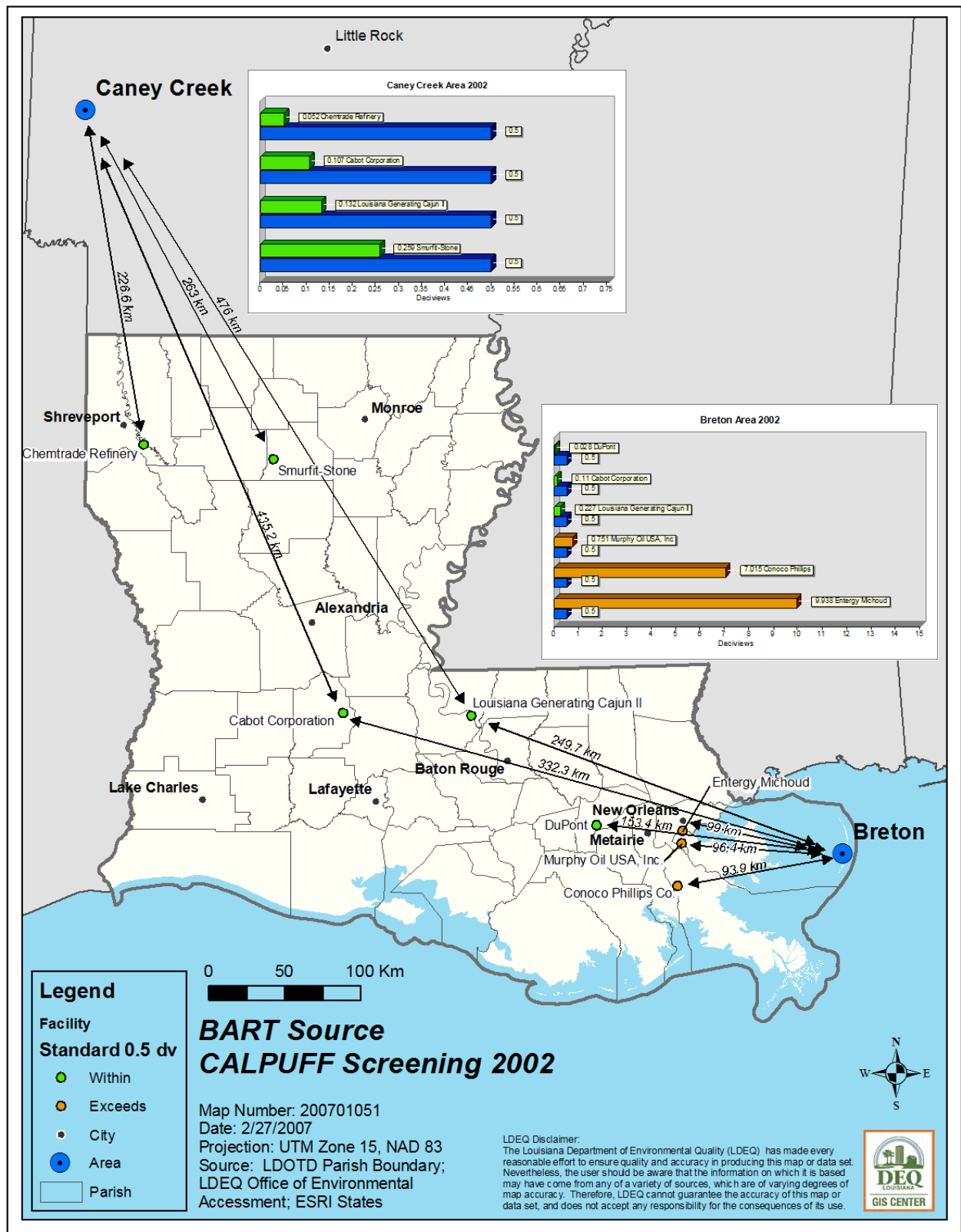
Figure 9.9

Figure 9.10

BART Source CALPUFF Screening 2002

Figure 9.11

BART Source CALPUFF Screening 2003